



Phenomenological Analysis of The Interior Space Reconstructed for Post-War Traditional Houses in Old Mosul City

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Submitted: 18/04/2025

Revised: 28/05/2025

Accepted: 09/10/2025

Published: 01/01/2026

KEY WORDS

Reconstruction House,
Lived Space, Spatial
Structure, Traditional
Houses, Phenomenological
Philosophy.

ABSTRACT

This study examines the lived experiences of residents of Mosul's old city within reconstructed traditional houses following the war, addressing the gap in analyzing post-war residential spaces. It examines how reconstruction influences residents' perceptions, sensory experiences, and attachment to place by comparing pre- and post-war conditions. Using a phenomenological approach, the study draws on concepts such as familiarity, pleasure, spirituality, human scale, natural lighting, spatial organization, functionality, color harmony, symbolism, nostalgia, decoration, and perceived height. Data were collected through a questionnaire involving 40 residents who were involved in the reconstruction of four traditional houses. Findings indicate that while renovations improve functional aspects, such as spatial organization and lighting, emotional and sensory experiences shift noticeably. Declines in familiarity, pleasure, symbolism, and spirituality highlight a complex transformation of the living environment. Despite physical improvements, restoring pre-war psychological images and emotional ties remains challenging. The study concludes that reconstruction should address both tangible and intangible heritage to foster a sense of belonging, preserve memories, and rebuild authentic relationships with living spaces.

الكلمات المفتاحية

نمذجة معلومات البناء (BIM)،
الواقع المعزز (AR)، التصور
ثلاثي الأبعاد، مراجعة النماذج.

الملخص

تستكشف هذه الدراسة التجارب المعيشية لسكان مدينة الموصل القديمة من خلال إعادة إعمار الفضاءات الداخلية للبيت التقليدي بعد الحرب، حيث تعالج فجوة معرفية في تحليل الفضاءات السكنية ما بعد الحرب عبر منظور ظاهري. وتركز على كيفية تأثير الإعمار في تصورات السكان وتجاربهم الحسية وتعلقهم بالمكان، بمقارنة ظروف ما قبل الحرب وما بعدها. اعتمدت الدراسة نهجاً ظاهرياً واستندت إلى مفاهيم مثل الألفة، المتعة، الروحانية، المقياس البشري، الإضاءة الطبيعية، التنظيم المكاني، الملاءمة الوظيفية، تناغم الألوان، الرمزية، الحنين، الزخرفة، والارتفاع المتصور، من خلال استطلاع شمل 40 مشاركاً في إعمار أربعة بيوت تقليدية. تشير النتائج إلى أن الإعمار حسن الجوانب الوظيفية كالتنظيم المكاني والإضاءة، لكنه غير بشكل ملحوظ التجارب العاطفية والحسية، مع تراجع في الألفة والمتعة والرمزية والروحانية. كما يبقى استعادة الصور النفسية وروابط الانتماء لما قبل الحرب تحدياً معقداً. وتخلص الدراسة إلى أهمية إعادة إعمار تراعي الأبعاد الملموسة وغير الملموسة للتراث الثقافي لتعزيز الانتماء، حفظ الذاكرة الجماعية، ودعم إعادة تواصل السكان مع فضاءات معيشتهم.

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DOI: <https://doi.org/10.36041/iqjap.2025.159263.1156>

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1. Introduction

After being taken over by ISIS, the city of Mosul underwent liberation operations that destroyed most of its landmarks in the old city, and this area contained significant urban heritage, particularly traditional houses that reflected the unique architectural identity of Mosul, distinct from that of other Middle Eastern cities. Following the return of displaced residents, the immediate reconstruction of these houses became essential. Some of these homes dated back to the Ottoman era and formed a crucial part of the city's historical memory. Various stakeholders, including residents themselves, local authorities, and international organizations, contributed to the reconstruction efforts using diverse methods. Consequently, reconstruction outcomes ranged from preservation of original structures to complete replacement with new designs. (Alsarraf & Alasadi, 2025).

This variation highlights a key research question: How does the reconstruction of these historic traditional houses in postwar Mosul affect residents' sense of life, connection to tradition, and sense of place, especially compared to pre-war domestic realities?

Despite extensive reconstruction work, a notable gap remains in research that explores the experiential and sensory dimensions of these interiors in post-war Mosul. Addressing this gap is critical because understanding residents' lived experiences can inform future post-conflict urban reconstruction projects and heritage preservation strategies. Therefore, the primary objective of this study is to analyze the interior environments of selected traditional house reconstructions in Mosul from a phenomenological perspective, focusing on how these environments meet the physiological, intellectual, and emotional needs of the residents. It involves exploring residents' perceptions, memories, and sensory engagement with these spaces, considering both continuity and change from pre-war conditions. The study examines the relationship between the subject (occupants) and the object (reconstructed space), and applies this perspective to four selected traditional houses in Mosul.

2. Methodology

This study follows a phenomenological methodology to investigate the reconstruction of traditional house interiors in Mosul and their impact on residents' lived experiences. The research focuses on four reconstructed traditional houses in the old city of Mosul. The methodology is organized into sequential steps. The first step applies a phenomenological perspective to analyze residents' sensory, emotional, and functional engagement with interior spaces, capturing their lived experiences and sense of place. The second step focuses on the internal components of the traditional Mosul houses, such as room arrangements, circulation paths, lighting, ventilation, and tactile and visual qualities, to examine how these elements contribute to residents' perception, comfort, and emotional attachment. The third step involves practical fieldwork, where structured questionnaires are distributed to the residents of these houses to collect data on their experiences within the reconstructed interiors. Finally, the collected data are analyzed and interpreted to understand the phenomenological impact of the reconstruction process, linking the theoretical insights with residents' lived experience, as shown in Figure (1).

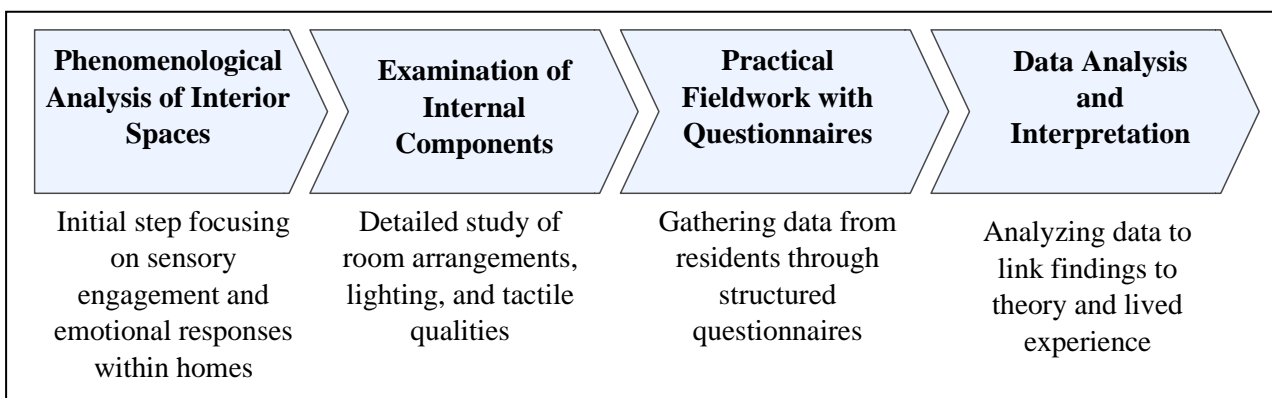


Figure 1. Flowchart of the Phenomenological Methodology for Analyzing Reconstructed Traditional Houses in Mosul. Source: (Authors).

2.1. Theoretical Framework

This study employs a phenomenological approach to investigate the reconstruction of traditional house interiors in Mosul and its impact on residents' lived experiences. The application of this methodology is divided into three interrelated research aspects. First, it explores the sense of lividness associated with the original spatial structure and inherent characteristics of traditional houses in pre-war Mosul. Second, it focuses on residents' direct sensory, emotional, and functional engagement with the reconstructed interior environment, studying changes in familiarity, comfort, and spatial perception. Third, the study examines the phenomenological impact of the reconstruction process itself and analyzes how decisions made during this process affect the continuity of local identity and collective memory.

2.2. Practical Study

The research leads to conducting a practical study by selecting research samples that included four traditional housings that were reconstructed after the war, where a questionnaire form was designed based on what was reached through models in the theoretical framework to know and evaluate the human experience of the users of those interior spaces of traditional housings from during the phenomenological analysis, let us then move on to analyze that data statistically, find out the results of the questionnaire, and come up with research conclusions.

3. The Concept of Reconstruction

The concept of reconstruction refers to the meaning of rebuilding. If building means building something, then rebuilding is (reconstruction); therefore, reconstruction means rebuilding, and it comes in the sense of rebuilding a building, city, or even an idea. If the house is destroyed in a fire, earthquake, flood, or war, you may try rebuilding it or building a new house. In both cases, it can be said that you are rebuilding your house (Majeed & Alsaliq, 2022).

4. Reconstruction Trends for The Old City of Mosul

Old Mosul, the capital of Nineveh Governorate, is situated approximately 350 km north of Baghdad, on the banks of the Tigris River. In 2014, ISIS seized it. During the occupation and the Battle of Mosul, buildings and infrastructure were destroyed, and centuries-old mosques and churches were burned or severely damaged. Following the city's liberation in September 2017, approximately 5 million people returned to their homes (Bank, 2023).

According to a World Bank Group report issued in 2018, the amount of residential damage (destroyed) in the Old City of Mosul amounted to about 54% of the total housing stock in the region (World Bank, 2018). The Mosul Center for Culture and Science's mid-2019 report indicates that residents of the old Mosul city, whose houses were destroyed, are resisting the reconstruction of their homes in a traditional manner. 53% of the report attributes this to the traditional house's inability to perform modern event duties from the viewpoint of "Look at these people" (Ibrahim & Ibrahim, 2019). The process of reconstructing traditional houses in the old city of Mosul began to accelerate after 2019, when UNESCO participated in the reconstruction of approximately 124 houses in accordance with the traditional style of the area (El-Zubi, 2023). Various local community organizations collaborated with the residents of the remaining residences to reconstruct them. The traditional houses and the combination of modern and traditional styles, as well as the diversity of styles (Chizzoniti & Lolli, 2023), (there are no statistics available to determine the proportion of each style that was reconstructed).

5. Mosul: Previous Literature Review

Several studies have examined the reconstruction of traditional houses in the historic city of Mosul. For instance, Hamdi and Aksulu (2024) addressed the causes and consequences of social and material changes in traditional houses in Mosul between 2014 and 2023, which were reconstructed. The study which was conducted on 40 housing units was based on a set of social and architectural standards, such as the size of the family, its social cohesion, and its living situation, which reflected the aspects that can be affected by conflicts and wars and thus are reflected like the social and cultural life of the population, the architectural structure, and the identity of the place. The study concluded that behavioral changes in the

social activities of residents in traditional houses led to modifications in the spaces, particularly in areas for social gatherings, annexing these spaces to others, and reducing the size of the courtyards (Hamid & Aksulu, 2024).

In the study “Mosul: Housing Reconstruction after the ISIS War,” Saeed et al. (2022) developed a methodological framework for reconstructing the housing sector, emphasizing the participation of displaced families in the design of potential post-war housing. Their work proposed three ideal models of housing units based on the needs and desires of residents, combining traditional floor plans with modern elements and locally influenced appearances (Saeed et al., 2022).

Another related study by Saeed and Salem (2018), “Strategies for Preserving Local Architectural Features of Post-War Mosul Houses,” concluded that restoration is a key strategy for preserving these features. They emphasized the need to recreate damaged or missing architectural elements, citing reconstruction experiments in Warsaw and Berlin, and underscored the importance of preserving the courtyard to maintain the house’s architectural identity, while suggesting that the absence of metaphorical elements does not necessarily detract from it (Saeed & Hassan, 2018).

While these studies have provided valuable insights into the structural, social, and strategic aspects of reconstructing traditional houses in Mosul, a significant gap remains in understanding the nuanced relationship between the reconstructed interior spaces and the lived, sensory, and emotional experiences of their users. In particular, the phenomenological impact of these reconstruction efforts on residents’ sense of home, belonging, and attachment to heritage has not been adequately examined in previous literature. This study, therefore, fills this knowledge gap by applying a phenomenological approach to investigate how users of reconstructed traditional houses in Mosul perceive and experience their altered interior spaces, with the goal of revealing the nature of postwar domestic realities.

6. Interior Space from A Phenomenological Perspective

Understanding the interior from a phenomenological perspective shifts the focus from purely objective, measurable quantities to the subjective realm of human lived experience. Phenomenology, as a philosophical method, seeks to describe and explain the fundamental structures of experience as they present themselves in consciousness (Husserl, 1931). Applied to architecture, it can explore how interior spaces are not merely containers, but can be actively perceived, inhabited, and given meaning through direct, embodied engagement. This section examines the nature, sensory language, and experiential structure of interior space from a phenomenological perspective, ultimately forming an analytical framework of key concepts.

6.1. The Essence of Architectural Space: A Lived Reality

The architectural experience of an interior is essentially an encounter with its spatial essence. (Scruton, 2013). Understood phenomenologically, this essence cannot be reduced to physical components alone; rather, it arises from the dynamic interaction between the occupant and the environment (Merleau-Ponty, 2010). It gives rooms their unique appearance and function, evoking specific responses and shaping the reality of life within them. While earlier concepts, such as Aristotle’s concept of space (Zucker, 1970) or space as an enclosed, absolute entity (Chadirji, 1991), provide a starting point, the phenomenological perspective emphasizes that the perception of this (emptiness) or (abstinence) is realized through living, sensible things and human behavior (Scruton, 2013).

This kind of living space is characterized by intentionality, where consciousness is always directed toward the space and its elements (Sokolowski, 1999). Rather than passively absorbing spatial information, we actively interact with, interpret, and explore our surroundings. Therefore, the properties of interior space—whether it is a sense of confinement or freedom, safety or discomfort—are not based solely on geometry, but are shaped by this conscious, experience-based relationship (Al-Alwan & Abod, 2010). According to Schulz, space becomes understandable and meaningful through the interaction between its formal structure and human behavior and perception within it (Norberg-Schulz, 1971).

6.2. The Sensory Language of Interior Space

Interior spaces communicate profoundly through a sensory language, engaging occupants in a multi-sensory dialogue, which is at the heart of (sensory experience) that phenomenology seeks to explore.

Elements such as color, texture, lighting, and even sound contribute to the overall perception, which in turn alters our physiological and psychological states (Hassan, 2016). These are not just aesthetic additions, but are fundamental components of how we experience and perceive space, as the body's senses are important tools for experiencing and understanding our environment (Pallasmaa, 2005). The arrangement and quality of these sensory elements shape the perceptual structure of the interior, determining its form and influencing the human experience within it (Malnar & Vodvarka, 1992). For example, the play of light and shadow, the tactile qualities of materials, or the acoustic properties of a room are all integral to its lived character (Brown, 1992).

6.3. The Architectural Structure of The Interior Experience Space

The concept of structure as a term is represented by a system of relationships (composition and composition processes) that always operate within a rule or set of rules that are considered when composing or composing. For example, the composition of English letters follows certain rules, and the composition of chess pieces also follows specific rules. Such rules to which the composition above processes are subject are termed as rules or laws of composition (Al-Akkam, 1999). Ching expressed the structure of form in architecture as the process of assembling several elements with specific relationships through which expressions are produced. Space has formal dimensions linked to specific tasks (pragmatically and semantically dimensions) (Ching & Binggeli, 2012).

Schulz said that the description of space must include its analysis into elements and relationships, and the formal characteristics of its elements are linked to relationships of homogeneity, harmony, dissimilarity, and opposition with other elements. He also emphasizes that when studying any structure, it is necessary to follow an appropriate idea, divide it into distinct elements, and clarify their relationships. When the elements are connected by relationships that reach a space structure or space, this space possesses certain features and characteristics determined by the nature of the principles and relationships that connect them. In this way, space organization is understandable (Norberg-Schulz, 1971).

The above illustrates that the architectural structure of the interior space of experience comprises physical elements that, through their overlay, give the space its identity, as well as other non-physical elements linked to dimensions related to identity and Awareness.

6.3.1. Physical Elements of The Interior Experience Space

The interior space consists of six elements that complement each other and interact to give the space its plastic and artistic qualities (Ching & Binggeli, 2012).

- The lower horizontal level represents the floor of the space on which human social activities are held.
- The upper horizontal level represents the ceiling and is sometimes characterized by openings for lighting.
- Vertical planes: represent the boundaries of space (sides) and may represent walls, columns, or any other vertical elements.
- Space furniture: These are non-human components, whether plants or inanimate objects.
- Colors and texture convey a sense of the physical nature of space, linking colors to the spiritual, human, and cultural aspects.
- Lighting: Whether natural or artificial, it provides another sensory dimension, in addition to its primary function of illuminating the space.

6.3.2. Non-Physical Elements of The Interior Experience Space

The profound (lived) experience of interiors is most strongly felt in their non-material dimensions. These include the cultural meanings embedded in spatial typologies and practices, the collective and personal memories evoked by atmospheres or specific features, and the overarching spirit of a place (*genius loci*) (Norberg-Schulz, 1980). Identity is also inseparable from the environment in which we live. In particular, our homes become an extension of the self and a repository of personal history (Tomlinson, 2003). The perception of these intangible aspects – such as a sense of safety, belonging, or spirituality in a space – is generated through the interaction between individuals and the socio-cultural and historical dimensions embedded in the built form (Shepherd, 2019). For traditional houses, these non-physical dimensions are often crucial and have lasting significance beyond mere preservation.

6.4. Key Phenomenological Concepts for Analyzing Reconstructed Interior Spaces

The previous discussion has developed a phenomenological understanding of interior spaces, highlighting their experiential nature, sensory language, and the significance of physical and non-physical dimensions. To empirically investigate the lived experiences of residents in rebuilt traditional houses in Mosul, this study operationalizes this understanding using a selected set of phenomenological key indicators. These indicators are synthesized from existing architectural and phenomenological literatures, serving as an analytical framework to systematically explore and interpret residents' nuanced perceptions, interactions, and meaning-making in transformed living spaces. Table (1) below explains these selected phenomenological concepts in detail, describing each concept and outlining its typical expression in architectural space. This framework will directly inform data collection and subsequent analysis of the residents' experiences after reconstruction.

Table 1. Phenomenological Indicators for Assessing the Lived Experience of Reconstructed Traditional Houses. Source: (Authors).

Type of phenomenon	Description of the phenomenon	The phenomenon exists in architectural space
Spirituality	Spirituality, as one of Heidegger's four phenomenological pillars (the sacred), represents faith and reassurance, grounding human existence and selfhood in time and place. (Al-Ataabi & Jalowb, 2018)	The presence of rituals and spiritual activities in the space
Human Scale	Bachelard uses this term to denote the infinitely small and infinitely large, emphasizing experience as a key to perceiving spatial scale (Bachelard, 1994).	The sense of space experience
Pleasure / Enjoyment	For Heidegger, pleasure arises from returning to things themselves, that is, to what is directly given in experience—the work of art. (Seamon, 2018).	Harmonious design, agreeable sensory qualities
Natural Lighting	We see this through Louis Kahn's philosophy of lighting from a phenomenological perspective. Light is a measurable given, a means of expression, and it is what gives formal embodiment and perception to the recipient (Lobell & Kahn, 2008).	Embodying space and giving it the third dimension of perception
Familiarity	Bachelard states that familiarity gives identity to space, that space with memory is familiar, and that familiarity arises from the simplicity of space, which stems from the clarity of its geometric dimensions (Bachelard, 1994).	Space geometry and purity of dimensions
Spatial Organization	Refers to the perceived relationship and arrangement of elements and sub-spaces within an interior, movement, influencing clarity, and use. Phenomenologically, it is how inhabitants experience & make sense of the spatial layout, impacting their orientation and ability to engage purposefully with their environment (Ching & Binggeli, 2012; Norberg-Schulz, 1971)	Clear circulation, logical room adjacencies, and defined functional zones.
Functional Appropriateness	Space, through function, will give the human experience a role in its formation, and thus, function will be the mental factor for the new user experience .Younus et al., 2024.	Space is linked to its architectural function.
Color Appropriateness / Harmony	Phenomenology seeks to distinguish what is constant within imagination, going beyond appearances to uncover essences. For example, experiencing the color red is not about the color itself, but about the intended essence that the individual perceives. Husserl describes this through his method of "typical" abstraction and phenomenological reduction .Younus et al., 202) .	Color is related to stereotypical abstraction in terms of user experience.
Symbolic Meaning / Significance	It refers to the culturally shared or personally attributed meanings of interior elements or spaces, which phenomenologically evoke memories, affirm identities, and connect residents to broader cultural narratives (Soltani & Kirci, 2019).	Meaningful ornaments, culturally significant layouts, and spaces evoking collective memory
Nostalgia / Longing for Return	Bachelard emphasizes this by discussing the space of the home, which is the place and our experience in it that gives us the longing always to return and make it a given example for starting a new experience (Bachelard, 1994).	This is related to the time of the space experiment.
Impact of Decorations	Decoration contributes to spatial experience by evoking familiarity and reinforcing a sense of place (Seamon, 2018).	Embellishments give light relief.
Perceived Height	This relates to light, scale, pleasure, and familiarity, all of which are revealed through human experience within the space .Younus et al., 2024.	Lighting, color, and decorations

7. The Interior Space of a Traditional Mosul House

In Mosul city, the term “Traditional house” denotes the residences situated within the old city. Throughout the course of history, from the initial establishment of Mosul to the present day, residents have repeatedly rebuilt their homes. Nevertheless, they preserved the same architectural elements, building materials, and construction methods and techniques (Abdulwahid & Abdulqader, 2020).

7.1. Components of the Interior Space of The Mosul House

Traditional Mosul houses are a vital part of the city’s rich urban heritage, representing a unique architectural typology closely tied to the local climate, available materials, and the socio-cultural structure of its inhabitants (Alsarraf & Alasadi, 2025). Understanding their original spatial components and inherent residential qualities provides a crucial basis for evaluating the phenomenological impact of post-war reconstruction efforts. These houses are not just shelters, but complex environments that shape and reflect the daily lives, social interactions, and cultural values of the families in Mosul. Figure (2):

- **Basement (Sirdab):** The basement offers a distinctive sensory experience through its coolness and soft lighting, providing comfort and relief from the summer heat. Beyond its functional role as a retreat that enhances well-being, it also carries symbolic value as a place of refuge, often intertwined with memories, familiarity, and nostalgic associations with past experiences.
- **The Iwan serves as a representative reception room, embodying symbolism and social representation.** Its opening to the courtyard provides a pleasant transition, while its size and occasional decoration can evoke a sense of spirituality or awe. The Iwan is essential for social activities, as it reinforces nostalgia associated with traditional hospitality and family honor.
- **Courtyard:** The central courtyard is fundamental to the familiarity and daily rhythm of. It brings joy through its connection to natural light and air, and provides a unique sensory experience. Its design often enhances spatial clarity and supports a variety of functional activities, from social gatherings to children's play, contributing to family well-being and a sense of place (Al-Doji, 2002).
- **Rooms:** The various rooms arranged around the courtyard have specific functions. However, their living experience is shaped by their human scale, the quality of natural light, and the familiarity of traditional layouts and furniture. The clarity of their functions and their contribution to the overall interior design influence the daily rhythm and pleasure of living.
- **Entrance:** The curved entrance is a key element in the house’s privacy and security, creating a clear division between public and private spaces. Its design symbolically embodies privacy and cultural values, influencing the first sensory experience upon entering the house (Alsarraf & Alasadi, 2025).

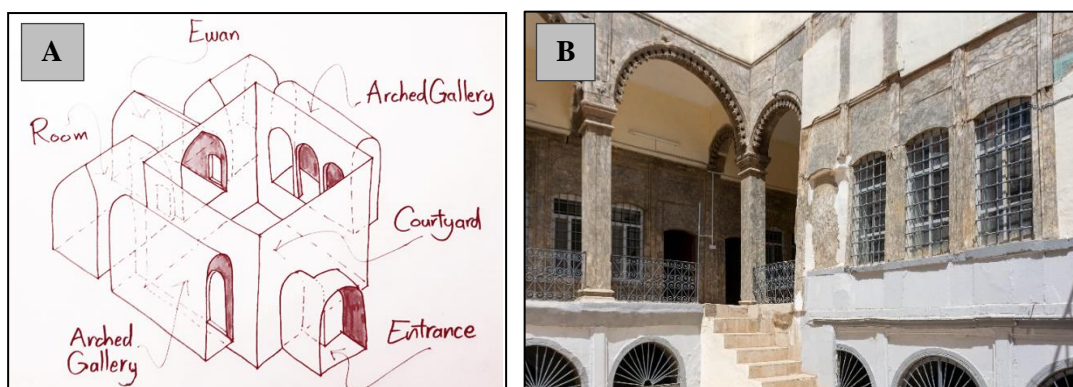










Figure 2. Components of the Mosul House: Picture (A) shows a 3D illustration of the components, while Picture (B) shows the actual house. Source: (Al-Omary & Sabah 2022).

8. Field Research Methodology

A practical study was conducted by selecting four well-known traditional houses in Mosul: Beit Al-Tutanji, Beit Suleiman Al-Sayegh, Beit Amin Bik Al-Jalili, and Beit Ziada, for which pre-reconstruction information was available, see Table (2). A questionnaire was developed to assess the human experience after reconstruction, based on the phenomenological indicators and their relationship to architectural

structure as outlined in the theoretical framework, see Figure (3) for questionnaire structure. This questionnaire was distributed to a total of 40 participants (10 associated with each house sample) interested in Mosul's architecture and heritage. The collected data were then analyzed using descriptive statistics (Excel 2023) to identify initial findings, see Figures (4)-(15) for a summary of results, which subsequently informed the in-depth phenomenological interpretation.

Table 2. Indicators: The selected research samples for the practical study. Source: (Authors).

Sample Name	Sample Description	Pre-Destruction Image	Images Post-Reconstruction
Beit Al-Tutanji	It is believed that the year of its construction dates back to 1809 AD. Mustafa Agha Al-Tutanji bought it from the Ottoman governor on a date close to its construction. It represents an example of Mosul architecture. The house features a large courtyard and exterior walls decorated with local marble reliefs. The house was destroyed during the occupation of Mosul by ISIS in 2017, and reconstruction work began by UNESCO.		
		Source: (University of Pennsylvania, Iraq Heritage, 2020).	
Beit Al-Sayegh	One of the important heritage houses built in the 1920s, belonging to the historian and researcher, Bishop Suleiman Al-Sayegh. It was destroyed during ISIS's occupation of Mosul and was reconstructed in 2023 by UNESCO.		
		Source: (Ministry of Culture, Tourism and Antiquities, 2023).	
Beit Al-Tawalib	One of Mosul's traditional houses. Construction began in the late 20th century. Mosul stone (Al-Faghash) is used for. A big two-story courtyard is there. It has several Mosul motifs, inscriptions, and ornaments. UNESCO reconstructed it in 2023.		
		Source: (Alsarraf and Alasadi, 2025).	
Beit Ziada	traditional Mosul heritage house. The interior courtyard, outside courtyard, and kitchen make up the building's layout. Size: 3,120 square meters. The 1748-built Muhammad Amin Pasha al-Jalili owned it. The house has all the architectural and artistic elements of a Mosul house. UNESCO reconstructed it in 2024 after ISIS occupied Mosul.		
		Source: UNESCO Iraq (2024).	

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Questionnaire for the first sample (Beit Al-Tutunji)

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Not shared

Feeling pleasure and enjoyable

	high	medium	low
Before reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Feeling familiar and not bored

	high	medium	low
Before reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Where are functional activities appropriate for use?

	high	medium	low
Before reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Where do you feel the presence of the moral symbolic aspect?

	high	medium	low
Before reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Where do you feel the power of the decorations that decorate the space?

	high	medium	low
Before reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Where do you feel a longing to return to space?

	high	medium	low
Before reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Where do you find the height that suits you best?

	high	medium	low
Before reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Feel the spirituality of the space when using it

	high	medium	low
Before reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Where do you realize the existence of the human scale?

	high	medium	low
Before reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Where do you feel the presence of the spirit of natural lighting?

	high	medium	low
Before reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Where do you feel there is a suitable space organization?

	high	medium	low
Before reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Where are the colors most appropriate and compatible with the space?

	high	medium	low
Before reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After reconstruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 3. The questionnaire was distributed to 40 people interested in Mosul's architectural heritage. Source: (Designed by the Authors).

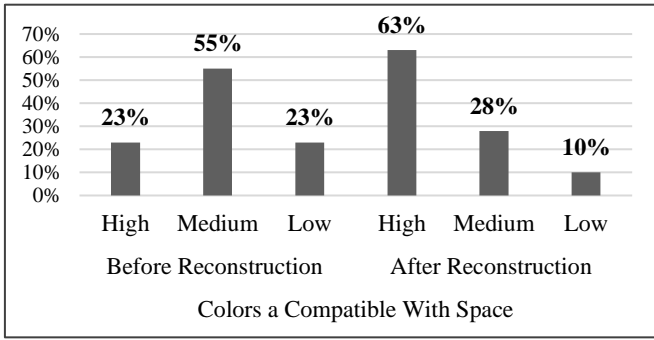


Figure 4. Users' feelings regarding colors compatible with the space before and after reconstruction. Source: (Created by authors using Excel 2023).

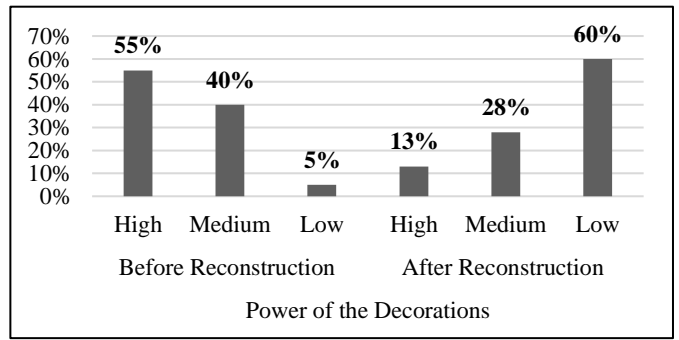


Figure 5. Users' feelings regarding the power of decorations before and after reconstruction. Source: (Created by the Authors by Excel 2023).

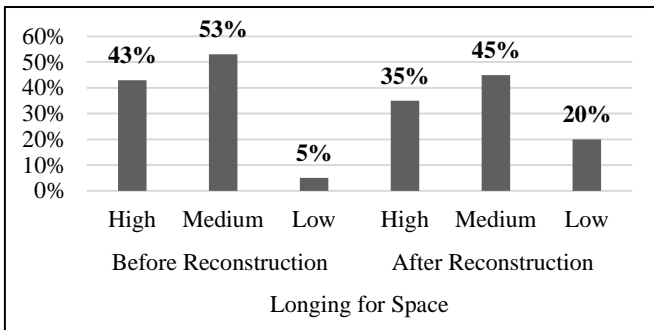


Figure 6. Users' feelings regarding longing for space before and after reconstruction. Source: (Created by authors using Excel 2023).

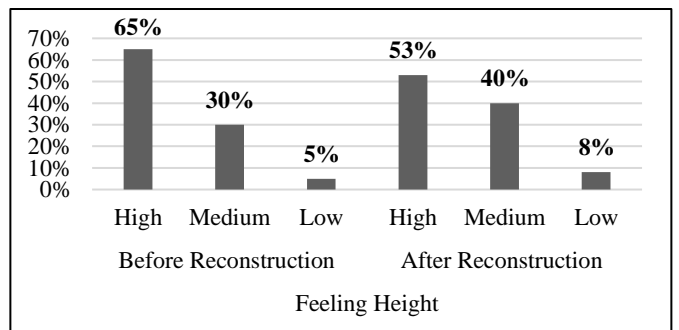


Figure 7. Users' feelings regarding height before and after reconstruction. Source: (Created by the Authors by Excel 2023).

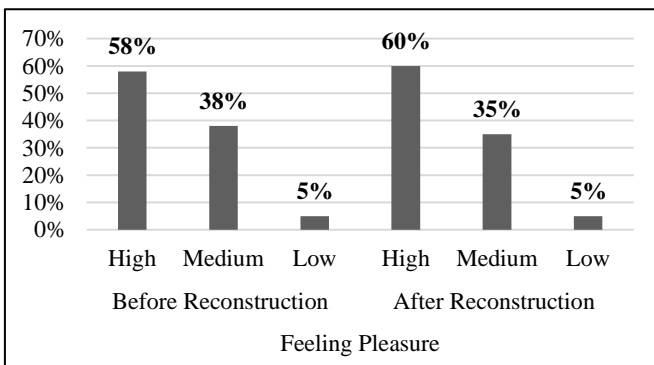


Figure 8. Users' feelings regarding pleasure before and after reconstruction. Source: (Created by the Authors using Excel 2023).

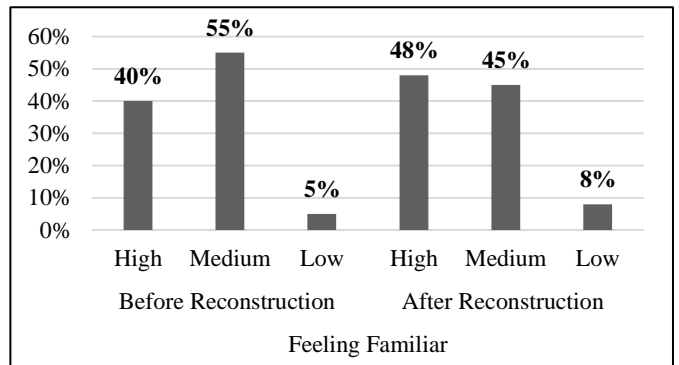


Figure 9. Users' feelings regarding familiarity before and after reconstruction. Source: (Created by Authors by Excel 2023).

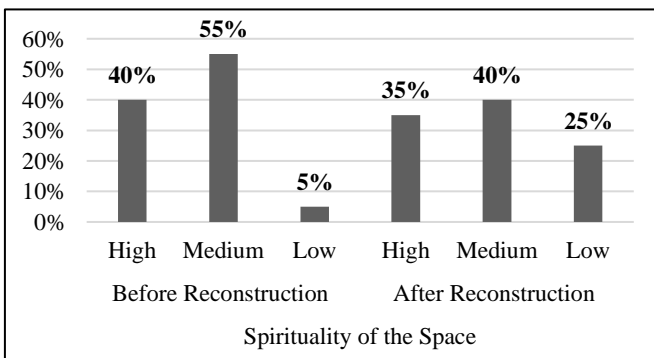


Figure 10. Users' perception of the spirituality of the space before and after reconstruction. Source: (Created by Authors by Excel 2023).

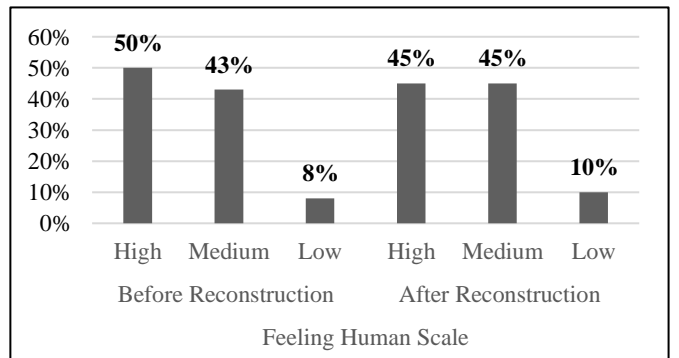


Figure 11. Users' feelings regarding the human scale before and after reconstruction. Source: (Created by authors using Excel 2023).

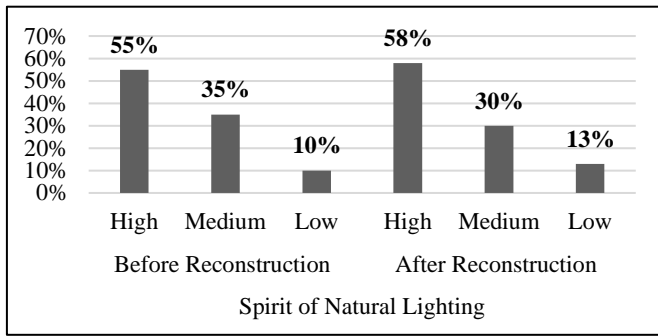


Figure 12. Users' feelings regarding the spirit of natural lighting before and after reconstruction. Source: (Created by the Authors by Excel 2023).

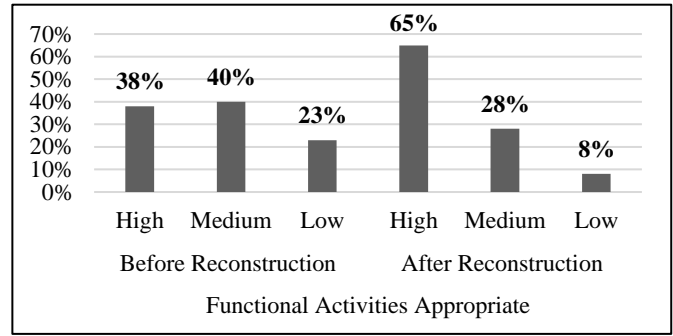


Figure 13. Users' feelings regarding functional activities appropriateness before and after reconstruction. Source: (Created by Authors by Excel 2023).

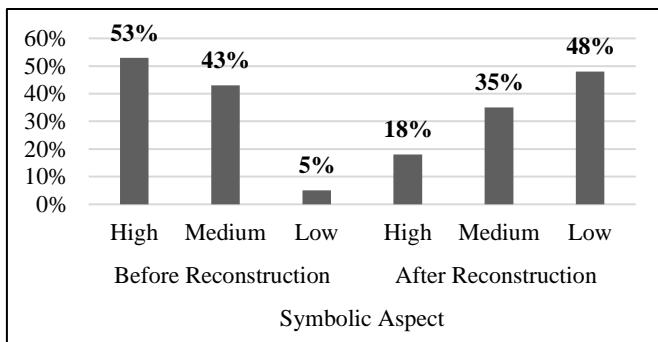


Figure 14. Users' feelings regarding the symbolic aspect before and after reconstruction. Source: (Created by the Authors using Excel 2023).

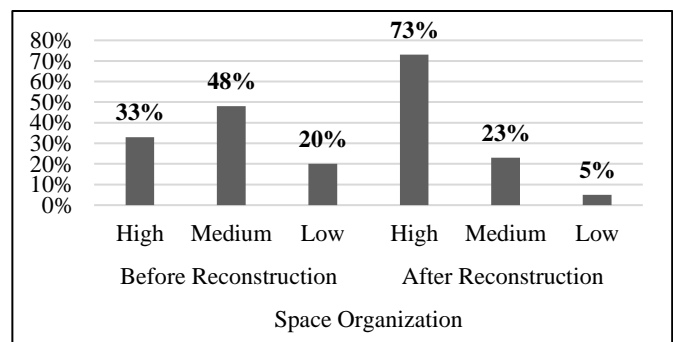


Figure 15. Users' feelings regarding space organization before and after reconstruction. Source: (Created by the Authors using Excel 2023).

9. Discussion and Analysis of Results

Statistical results presented in this section and summarized in Figures (3-14) indicate that residents' experiential assessments of traditional houses in Mosul have changed significantly compared to the pre- and post-reconstruction situations. This section provides a detailed phenomenological discussion and analysis of these findings, aiming to explain the underlying meaning and significance of these changes. The analysis draws on an established theoretical framework and key phenomenological indicators (see Table (1)) to examine how different reconstruction approaches affect residents' lived experiences, sensory engagement, emotional responses, and overall connection to the altered home environment.

9.1. Affective and Sensory Experiences

The data suggest a complex shift in basic affective and sensory dimensions. Familiarity, the cornerstone of a 'feeling of house, saw a marked decline in this factor: 'High' ratings dropped from 48% pre-reconstruction to just 8% post-reconstruction. This profound shift in lived experience suggests that changes in the material, textural, or sensory environmental characteristics of the rebuilt space may have disrupted deep-seated signals that promote a sense of belonging. The intentionality of consciousness, its orientation towards familiar and pleasurable environments, appears to have encountered a new, less fixed reality. The loss of familiarity is likely to have led to a change in the perception of pleasure/enjoyment. While 58% reported a 'High' level of enjoyment before the renovation, the majority (60%) rated it as 'Medium' afterwards. This suggests that while the functionality of the space has improved, the essence of the space that previously evoked deep delight – perhaps through a specific interplay of light, proportion, or cherished details – has been altered, impacting the residents' emotional connection to their home.

Conversely, the perception of natural light increased slightly in "High" ratings (from 55% to 58%), perhaps reflecting the fact that some rebuilt homes were designed with daylight in mind. This improvement in sensory experience is a positive result. However, it contrasts sharply with the color appropriateness/harmony ratings, which dropped sharply from 55% to 23%. This deviation warrants closer examination: new color palettes may be clean or modern, but they may lack the warmth, texture, or cultural

resonance of traditional pigments and materials, which can impact the overall sensory experience and potentially alter the perceived atmosphere of a place.

9.2. Spiritual, Symbolic, and Place-Related Aspects

Reconstruction appears to have had a significant impact on less obvious, but still important, aspects of the housing. “High” ratings for spirituality within the rooms declined (from 40% to 35%), while symbolic meaning dropped dramatically, from 53% to 18%. These findings strongly suggest that the war and subsequent reconstruction altered not only the physical structure of these houses, but also their presence and symbolic impact.

The reduction in symbolic meaning suggests that elements or spatial arrangements that previously held deep cultural, religious, or personal significance may have been lost or altered in meaning. The lower perceived “effectiveness” of ornaments (high rating, down from 55% to 40%) may account for this, as traditional ornaments often serve as direct carriers of collective memory and identity. Residents can now interact with central architectural elements in a more nuanced way, which are often rich in symbolic and emotional content. If these elements are rebuilt in different forms or materials, their ability to evoke cherished memories or reinforce cultural values may be limited. This has a direct impact on the sense of space and intimacy, as the home's ability to serve as a store of meaning and a source of emotional security is compromised when its symbolic language is disrupted.

9.3. Lived Experience of Spatial Configuration, Scale, and Functionality

There was a significant improvement in the perception of spatial organization, with a significant increase in the number of people rating suitability as “High” (from 33% to 73%). This may be due to the introduction of more rationalized or modernized floor plans during the reconstruction, which addressed previous functional and circulation deficiencies. However, from a phenomenological perspective, such apparent improvements in organization must be weighed against their effects on other experiential qualities. For example, a more efficient floor plan could alter traditional spatial flows to promote family intimacy or the unique characteristics of Mosul housing.

At the same time, perception of human scale decreased slightly (from 50% to 45%), and perception of body height/suitability also decreased (from 65% to 53%). These results suggest that while some spaces may be better organized, they may not be as comfortable for human use. This difference can subtly undermine the experience of comfort, safety, and a sense of being at home.

Functional adequacy showed significant improvement (“high” ratings rose from 38% to 65%), consistent with improved room layouts. This suggests that the reconstructed house is now more suitable for today’s daily activities. However, the central question of phenomenology is how this enhanced functionality relates to, or potentially overlays with, the equally important sensory, emotional, and symbolic dimensions that make up a truly meaningful and livable home. The challenge highlighted by these findings is to achieve a balance where improvements in functionality do not inadvertently compromise the deeply rooted familiarity or perceived spirit of the place.

9.4. Nostalgia and the Enduring Connection to Past Spaces

Finally, data on nostalgic/desirable returns reveal a mixed emotional landscape. While “High” desire decreased slightly (53% to 45%), “Medium” desire increased (30% to 35%). This ambivalence suggests that even when functional improvements are recognized, a clear underlying desire remains. This nostalgia may be related to the loss of sensory qualities, diminished symbolic meaning, and irretrievable memories of the pre-war house. It highlights the enduring power of collective memory and the deep emotional and existential attachment individuals have to their original, authentically inhabited living spaces, which are being rebuilt despite the best intentions.

10. Conclusions

This phenomenological investigation into the reconstructed interior spaces of traditional Mosul houses reveals important insights regarding the residents’ lived experiences. While reconstruction generally improves functional aspects such as spatial layout and natural lighting, it also significantly alters the emotional experience of the home. Declines in familiarity and enjoyment indicate that changes in materials,

sensory qualities, and the overall sense of space have created a separation from the pre-war domestic environment. These findings suggest that recreating a mental image of ‘what came before’ is a complex phenomenological challenge that cannot be addressed by reconstruction alone.

The intangible dimensions of home, particularly symbolic meaning and spirituality, are profoundly affected by reconstruction. Alterations or losses of traditional decorative elements and certain spatial configurations appear to diminish the capacity of these homes to evoke deep-seated cultural, personal, and collective memories. Moreover, that highlights the fragility of the “spirit of the place,” which is intricately linked to both tangible and intangible continuities.

Residents generally appreciate improvements in functional adequacy and spatial layout; however, these enhancements are sometimes accompanied by nuanced changes in the perception of human scale and body-related comfort. This suggests that modern renovation approaches, even when effective, do not always fully align with the scale of comfort and intimacy once experienced in traditional settings. The sensory experience of space emerges as a delicate balance shaped by multiple interacting factors.

Despite functional improvements, residents often express a persistent, nostalgic longing for the original space, underscoring the enduring power of memory and the deep emotional attachment to authentic, inhabited environments. While the reconstructed space may serve as a material and intellectual model, it does not automatically or completely replace the phenomenological richness of the original home within the collective memory and identity of its inhabitants.

Finally, the mentality of designers and reconstructions plays a crucial role in either nurturing or disrupting this vital connection to the lived past. A phenomenological approach to the reconstruction of heritage housing after war must therefore extend beyond physical and functional aspects. It must carefully consider, and where possible restore, the sensory, symbolic, and spatial qualities that promote a sense of familiarity, emotional security, and enduring belonging and identity.

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